CHAPTER FOUR
METHODOLOGY
OF
RESEARCH
CONTENTS

4.1 Introduction
4.2 Methodology of Research
4.3 Techniques and Tools of Research
4.4 Sampling Techniques : Pilot Study
(Including statistical Tools).
4.5 Problems Faced by the Researcher.
4.6 Conclusive Aspects.
CHAPTER PLAN: FOUR

4.3 TOOLS

- Interview
- Observation
- Questionnaire
- Opinions

INCLUDES PUBLICATIONS

4.3 METHODS

- Operational
- Historical
- Survey
- Case History

INCLUDES TECHNICAL SERVICES

4.4 PILOT SURVEY

4.4 SAMPLING

4.5 PROBLEMS FACED BY THE RESEARCHER
4.1. **INTRODUCTION**

Methodology of research is an art as well as science. From the angle of art, it reflects the principles and foundations on which the methodology is to be carried out in different dimensions. Methodology is a logical science by itself from the scientific point-of-view of administration of the necessary tools.

Both these aspects have been taken into consideration during the investigation of the research problem, especially from the OPERATIONAL RESEARCH OUTLOOK.

Traditional methods have a minor role to play at certain stages of this research process, since most of the road transport systems of Bombay are tradition-oriented. Latest trends in research like the Action research, the Computer oriented research, the System Analysis and the Structural research have taken lion's share in this output.

The entire process of research has been operated in different phases.

**PHASE ONE**

**TAPPING THE RESOURCES**

In this stage, the researcher has tapped all the feasible available sources designed for research — theoretical and
practical. The net result finally culminated in the form of framing the research problem.

PHASE TWO

SAMPLING SELECTION

To avoid the 'subjectivity' which is vital enemy number one for the research process, the researcher has selected the sample on logical grounds. Sampling of the population, tools, techniques, modus operandi and all other elements of research are all erected solely on logical justification (details are discussed in the chapter).

PHASE THREE

SURVEY ANALYSIS

The hypothetical considerations which are the mile stones for this research and which are verified through sampling techniques, have taken macro-outlook at this stage. Here population, respondents and other elements are magnified both in quality and quantity.
PHASE FOUR

SYSTEMS ANALYSIS COMPUTERS

Computers are widely used for the data analysis and different settings are created in different sequences, to interpret the graphical representations without any element of 'subjectivity'.

PHASE FIVE

FINAL OUT-COME

Arriving at general forms is also known as 'Generalisation'. Abstractions are made, Configurations are computerised. All these things finally took the shape of the "Research findings or conclusions".

PHASE SIX

FEED-BACK MECHANISM

Once again these conclusions are confirmed through the reversal process, where experts in the field played a key-note address in verifying the Research findings through critical examinations. Of course given to the researcher in the form of feed-back.
PHASE SEVEN

CONCLUSIVE ASPECTS

After the verification of the hypotheses for reliability, validity and universality through suitable tests and cross-checking techniques, with the help of these hypothetical frame-works along with their conclusions, the researcher could arrived at, suggestions and recommendations on a broad canvas, giving ample scope for further research follow-up studies.

4.2. RESEARCH METHODS

The Historical Survey Method is employed to study the problems faced by the Road Transport System during different periods of history at international and national levels.

The Normative Survey Method covered all the facets of current problems of the Road Transport System of Greater Bombay. Questionnaire, interview, opinionnaire, schedules and casual comparative study and other schedules helped in the comparative analysis of different zones selected for survey.

The whole scheme of modus operandi had followed strictly the foot prints of the
OPERATIONAL RESEARCH, in which case the unwanted variables are rejected while selecting the right variables in right perspective. The Dependent, the Interdependent, the Independent and other variables are all analysed on different rating scales for computer analysis. No stone is left unturned. Maximum care has been taken in the schematic representations of various paradigms.

The Principles that one can notice in this area are:

i) **Principle Of Inter-discipline**:
   Inter-disciplinary system is adopted, with exploring relationships.

ii) **Principle of Isolation**:
    No method is taken in isolation for the process of study.

iii) **Principle of Analysis**:
    Variables are scattered in different ways for different readings, to know exactly how these variables function.

iv) **Principle of Representation**:
    Every thought has its unique schematic representation for its paradigmatic outlook.
v) Principal of Selection:
Selection of current items and rejection of unwanted elements on local grounds is itself an art.

vi) Principle of Variation:
Maxima and Minima ranges are fixed for each item which is under investigation.

vii) Principle of Paradiomns:
Analysis is followed by synthesis and vice versa to get an overview of the whole system.

viii) Principle of Recency:
Current research trends have their specific role to play.

Thus the scheme itself is operated on the above set of principles.

4.3.1. ANALYSIS OF THE QUESTIONNAIRE
(Administered to the respondents)

QUESTIONNAIRE

1. Name of the Institution:
2. Year of Establishment:
3. Place of Registration: Head office:
4. Location:
5. Address:
OBJECTIVE:

TO REVEAL THE BACKGROUND OF THE RESPONDENTS.

Kindly tick ( ) the relevant items.


OBJECTIVE:

TO IDENTIFY THE NATURE OF THE ORGANISATION.

7. Total number of agencies / branches:

OBJECTIVE:

TO STUDY THE STRENGTH AND AREAS COVERED BY THE ORGANISATION.

8. Services designed for: tourist/Paratransport/ Goods/Passengers.

OBJECTIVE:

TO STUDY THE NATURE OF SERVICES AVAILABLE.

9. Total Number of vehicles:

10. Average Life:

OBJECTIVE:

TO MAKE A COMPARATIVE STUDY IN THE AVAILABILITY OF VEHICLES.
11. Kindly state your objectives of establishment:
   (a) Policy Objectives:
   (b) System Objectives:

**OBJECTIVE:**

TO ESTABLISH A RELATIONSHIP BETWEEN POLICY
OBJECTIVES & SYSTEM OBJECTIVES.

12. Have you changed your initial objectives?:
   YES/NO

13. If 'YES', what are the new changes you have made?
   (A = less than 1 year, B = 2 to 5 years,
   C = More than 6 years.)
   (a)    A    B    C
   (b)    A    B    C
   (c)    A    B    C

14. What are your reasons for above envisaged changes?:
   (a)
   (b)
   (c)

15. In future, what sort of changes are you anticipating to undergo?:
   (a)
   (b)
   (c)

**OBJECTIVE:**

TO FIND THE RATE OF CHANGE OF OBJECTIVES IN
DIFFERENT ORGANISATIONS.
16. What are your reasons for such an outlook? :
   (a)
   (b)
   (c)

**OBJECTIVE:**

TO FIND OUT THE REASONS FOR CHANGES IN OBJECTIVES, IF AT ALL EXIST.

17. Kindly draw a flow-chart showing the structure of your administrative set-up.

   (a) Strength of Staff:
   (b) Nature and Classification:

   1) Technical Personnel:
   2) Non-Technical Personnel:
   3) Experts/Specialists:
   4) Matriculates:
   5) Illiterates:
   6) Males:
   7) Females:

**OBJECTIVE:**

TO PICTURISE THE ADMINISTRATIVE SET-UP THROUGH RELEVANT SCHEMATIC REPRESENTATIONS.

18. Do you have sufficient staff? : YES/NO

19. If 'Less', why is it so? :
   (a)
   (b)
   (c)

**OBJECTIVE:**

TO ESTIMATE THE DISTRIBUTION OF WORK LOAD.
20. Are your staff members belong to any union? :
   YES/NO

21. If 'YES', to which union? :

22. How long? :

23. What are the reasons for joining/participating in such unions? :
   (a) Low wages/Allowances
   (b) Low rate of Bonus
   (c) Bad working conditions/Timings/Rationalisation
   (d) Trade Union Leadership
   (e) Conservative attitude of employer/employees
   (f) Miscellaneous

24. Could you kindly suggest recent incidents occurring through such unions? :
   (a) Strikes
   (b) Agitations
   (c) Gherao/Morcha
   (d) Go Slow/Work to rule/Absenteeism
   (e) Damaging property

25. What are the final outcomes? :
   (a)
   (b)
   (c)

OBJECTIVE :

TO STUDY THE MANAGEMENTAL PROBLEMS WITH REFERENCE TO UNION ACTIVITIES.

26. Is there any conflict between your management and the Trade Union? :
   YES/NO
27. If 'YES', why it is so? :
   (a)
   (b)
   (c)

28. Are these differences temporary/permanent? :

**OBJECTIVE**

TO BRING TO THE LIME-LIGHT THE CONFLICTS EXIST WITHIN THE MANAGEMENT AND THE TRADE UNIONS.

29. What are the different strategies have you employed in solving the administrative problems? :
   (a)
   (b)
   (c)

**OBJECTIVE**

TO NOTE DIFFERENT STRATEGIES EMPLOYED WHILE SOLVING DIFFERENT ADMINISTRATIVE PROBLEMS.

30. Are any of your problems still left without solution? : YES/No

31. If 'YES', kindly state some such problems :
   (a)
   (b)
   (c)

**OBJECTIVE**

TO MAKE A LIST OF HITHER-TO UNSOLVED PROBLEMS IN THE ADMINISTRATIVE SET-UP OF MANAGEMENTAL PROCESS.
32. Are your workers participating in the management programmes? : YES/No

(a) Workers Committee
(b) Employees Directors
(c) Co-Partnership
(d) Grievance Procedure/Suggestion Scheme

33. If 'NO', why is it so? :

(a)
(b)
(c)

OBJECTIVE

TO STUDY THE ROLE OF WORKERS' PARTICIPATION IN THE MANAGEMENT

34. What are the different methods employed in the motivation of workers and raising their morale?

[A = Very frequently, B = Rarely, C = Never, D = Negative motivation rarely, E = Negative motivation frequently]

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OBJECTIVE

TO IDENTIFY DIFFERENT METHODS OF MOTIVATION, SPECIALLY IN THE MAINTENANCE OF MORALE AMONG THE WORKERS.

35. Do you have any staff/worker's welfare schemes? :

YES/No
[A = Highest facilities, B = Less facilities, C = No facilities, D = No chance to create such facilities, E = Even in future, no chances of creating such facilities]

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Medical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Recreational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Educational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OBJECTIVE**

TO STUDY THE IMPACT OF THE WELFARE SCHEMES.

36. Have you employed any time the latest foreign-model solutions to handle such problems? : YES/NO

**OBJECTIVE**

TO LOCATE THE FOREIGN MODELLINGS IF EMPLOYED.

37. Has your staff/workers taken part in any training programmes? : YES/NO

[A = Regular, B = Very often, C = Not at all, D = No chance for taking part in programme, E = Will never be given such training in future]
38. If 'YES', when and how long? :

39. How many of them are the participants? :

OBJECTIVE

TO HAVE BIRDS' EYE - VIEW ON THE TRAINING PROGRAMME.

40. In what way you are benefitted by such training programmes? :

   (a)  
   (b)  
   (c)  

41. Do you encourage such training programmes? :

   YES/NO

42. If 'NO', why? :

   (a)  
   (b)  
   (c)  

OBJECTIVE

TO STUDY THE IMPACT OF SUCH TRAINING PROGRAMMES, MANAGEMENTAL AREAS IN PARTICULAR.
43. Have you any staff selection/recruitment procedure? : YES/NO
(a) Scrutiny of applications
(b) Trade/Written Test
(c) Psychological test
(d) Personal interviews
(e) Reference Check
(f) Medical examination

44. What are your sources of recruitment? :
(a) Internal transfers/Promotions
(b) Advertisement
(c) Labour Contractors
(d) Recommendations of Present Employees
(e) Employment Exchanges
(f) Colleges/Institutions/polytechnics
(g) Trade Associations/Unions
(h) Management Consultants/Private Employment Exchanges

OBJECTIVE
TO REVEAL DIFFERENT METHODS EMPLOYED IN THE SELECTION/RECRUITMENT OF THE STAFF.

45. Have you taken help from 'foreign collaboration' in solving some of your problems? : YES/NO

46. Are your problems solved by such collaborations? : YES/NO

OBJECTIVE
TO IDENTIFY THE FOREIGN-MODELS OR SCHEMES IMPLEMENTED, IF AT ALL.
47. If 'YES', kindly furnish the details:

<table>
<thead>
<tr>
<th>Year</th>
<th>Area</th>
<th>Nature of Problem</th>
<th>Extent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A B C D</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A B C D</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A B C D</td>
</tr>
</tbody>
</table>

48. Do you believe in the encouragement of such collaborations for other institutions? : YES/NO

49. If 'NO', why it is so? :

(a) 
(b) 
(c) 

**OBJECTIVE**

TO STUDY THE IMPACT OF FOREIGN COLLABORATION IN SOLVING THE PROBLEMS OF ROAD TRANSPORT.

50. Have you got in your panel any experts/ professionals to handle such problems? : YES/NO

51. If 'YES', kindly furnish the details:

<table>
<thead>
<tr>
<th>Nature of specialists</th>
<th>Area of specialisation</th>
<th>Percentage of problem solved</th>
</tr>
</thead>
</table>

**OBJECTIVE**

TO HAVE RECORD OF SPECIALISTS IN HANDLING DIFFERENT PROBLEMS.
52. How are you handling such problems, when such specialists are not available? :
   (a) 
   (b) 
   (c) 

**OBJECTIVE**

TO STUDY THE NATURE OF THE PROBLEMS HANDLED BY THE SPECIALIST.

53. Kindly furnish the following details:

   (Average Basis per vehicle)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>91</th>
<th>92</th>
<th>93</th>
<th>94</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Gross Profit/Earnings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Net profit before tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Net profit after tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OBJECTIVE**

TO REVEAL THE FINANCIAL BACKGROUND OF THE ORGANISATION.

54. Kindly state reasons for losses:

   (a) 
   (b) 
   (c) 

**OBJECTIVE**

TO FIND THE FLUCTUATION IN THE FINANCIAL SET-UP.
55. What different methods have you employed to
overcome such losses? :

(a)
(b)
(c)

OBJECTIVE
TO STUDY THE NATURE OF DIFFERENT METHODS
EMPLOYED TO OVERCOME THE FINANCIAL CRISIS.

[A = Always employed,  B = Very often,  C = Not
at all,  D = No chance to employ,  E = Even in
future will not be employed]

56. Have you employed latest management strategies
to such financial problems? : YES/NO

(A  B  C  D  E)

57. If 'NO', why it is so? :

(a)
(b)
(c)

58. If 'YES', what are such methods? :

(a)
(b)
(c)

59. What is the impact of such methods :

(a)
(b)
(c)

OBJECTIVE
TO STUDY THE REFLECTIONS OF THE LATEST
MANAGEMENT STRATEGIES EMPLOYED FOR FINANCIAL
PROBLEMS.
60. Are you referring such problems to any other consultancy services/Agencies?  : YES/NO
   ( A  B  C  D  E )
61. If 'YES', since how many years?  :

OBJECTIVE

TO ESTABLISH A RELATIONSHIP BETWEEN THE RELATED ORGANISATIONS AND OTHER CONSULTANCY SERVICES/AGENCIES.

62. Do you have educated/expert staff?  : YES/NO
   ( A  B  C  D  E )
   (For example Economist, Traffic Manager, etc.)
63. If 'NO', why you have not employed them?  :
   (a)
   (b)
   (c)

64. Name Consultancy Services, you are referring to your financial problems  :
   (a)  A  B  C  D  E
   (b)  A  B  C  D  E
   (c)  A  B  C  D  E

65. Have you got financial plans/policies to expand your economic horizons?  : YES/NO
66. If 'YES', what made you to think in this direction?:
(a)
(b)
(c)

OBJECTIVE
TO REVEAL THE NATURE OF FINANCIAL POLICIES AND THEIR DIRECTIONAL GROWTH.

67. Are you satisfied with current financial/liquidity position?: YES/NO

68. If you don't want to expand your financial competitiveness, why it is so?:
(a)
(b)
(c)

OBJECTIVE
A ANALYSIS OF THEIR FINANCIAL COMPETITIVENESS.

69. Do you feel certain malpractices/manipulations, etc. are the essential evils present in the financial development?: YES/NO

(A B C D E)

70. If 'YES', to whom are you to blame?:
(a) Government Policies
(b) Public behaviour
(c) Your organisation
(d) Trade Unions
(e) Competitors
71. To overcome such things, what remedies do you suggest? :
   (a) 
   (b) 
   (c) 

**OBJECTIVE**

TO BRING TO THE LIME LIGHT THE FACTORS THAT ARE RESPONSIBLE FOR THE MALPRACTICES/MANIPULATIONS.

72. Kindly furnish the details of annual percentage of loss incurred in your system:

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Accidents</td>
<td>91 92 93 94</td>
</tr>
<tr>
<td>b) Loading/Unloading</td>
<td></td>
</tr>
<tr>
<td>c) Strikes, etc. by workers</td>
<td></td>
</tr>
<tr>
<td>d) Government interference</td>
<td></td>
</tr>
<tr>
<td>e) Replacement of vehicles</td>
<td></td>
</tr>
<tr>
<td>f) Agents/Brokers</td>
<td></td>
</tr>
<tr>
<td>g) Maintenance and Repairs</td>
<td></td>
</tr>
</tbody>
</table>

**OBJECTIVE**

TO FURNISH THE DETAILS OF AN ANNUAL PERCENTAGE OF LOSS INCURRED BY DIFFERENT SYSTEMS.

73. Efficiency of certain items maintained by your Institution:

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Effective Fleet</td>
<td>91 92 93 94</td>
</tr>
<tr>
<td>b) Fleet utilisation</td>
<td></td>
</tr>
<tr>
<td>c) Effective vehicle k.m.</td>
<td></td>
</tr>
<tr>
<td>d) Average Fleet</td>
<td></td>
</tr>
<tr>
<td>e) Carrying Capacity</td>
<td></td>
</tr>
<tr>
<td>f) Passenger k.m.</td>
<td></td>
</tr>
<tr>
<td>g) Route k.m.</td>
<td></td>
</tr>
<tr>
<td>h) Load Factor</td>
<td></td>
</tr>
</tbody>
</table>
74. Do you have modern maintenance facilities? YES/NO

OBJECTIVE
TO CALCULATE THE EFFICIENCY OF THE ITEMS RELATED TO MATERIAL MANAGEMENT.

75. What are the factors you have taken into consideration for your route-choice?
(a) Population density
(b) Transit Patronage
(c) Competition
(d) Socio/Political Factors
(e) Peak hour demand
(f) Area Specialisation
(g) Life Style and Movement of People.

OBJECTIVE
TO KNOW THE FACTORS INVOLVED IN THE SELECTION OF ROUTE CHOICE.

76. Through which media do you advertise?
[A = Frequently, B = Daily, C = Rarely,  
D = Not at all]

(a) News Papers A B C D E
(b) Magazines A B C D E
(c) Professional Journals, etc A B C D E
(d) Modern Media A B C D E

OBJECTIVE
TO KNOW EXACTLY THE MEDIA THROUGH WHICH ORGANISATION REFLECTS ITS NATURE OF BUSINESS.
77. Acts and governing principles :
   (a) Kindly state the Act/Rules applicable to your business :
   
   (b) Do you feel that some necessary changes must be brought in? : YES/NO
   
   (c) If 'YES', where? :

78. In what way these changes are beneficial to you? :

   (a) 
   
   (b) 
   
   (c) 

OBJECTIVE

TO HAVE AN OVERHAUL ON THE ACTS/RULES RELATED TO SEVERAL TRANSPORT ORGANISATIONS.

79. Have you compared your transport systems with the other systems of Greater Bombay or other states/countries : YES/NO

80. What are the positive aspects noticed by you at the dominating leading companies? :

   (a) 
   
   (b) 
   
   (c) 

OBJECTIVE

COMPARATIVE ANALYSIS BETWEEN THE TRANSPORT SYSTEM OF GREATER BOMBAY WITH OTHER TRANSPORT AGENCIES OF OTHER SUBURBS/CITIES/STATES/COUNTRIES
81. Kindly state your relationship with the following Agencies:

[A = Very good,  B = Good,  C = No Neutral,  
D = Good,  E = Enemical]

<table>
<thead>
<tr>
<th>Party</th>
<th>Mode of Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Government Agencies</td>
<td>A B C D E</td>
</tr>
<tr>
<td>b) Banks</td>
<td>A B C D E</td>
</tr>
<tr>
<td>c) Insurance Companies</td>
<td>A B C D E</td>
</tr>
<tr>
<td>d) Other transport agencies</td>
<td>A B C D E</td>
</tr>
<tr>
<td>e) Women/Disabled/Childern</td>
<td>A B C D E</td>
</tr>
<tr>
<td>f) Pedestrians</td>
<td>A B C D E</td>
</tr>
<tr>
<td>g) Manufacturers of vehicles</td>
<td>A B C D E</td>
</tr>
<tr>
<td>h) Agents</td>
<td>A B C D E</td>
</tr>
<tr>
<td>i) Customers</td>
<td>A B C D E</td>
</tr>
<tr>
<td>j) Traveller's Associations</td>
<td>A B C D E</td>
</tr>
</tbody>
</table>

**OBJECTIVE**

TO FIND CORRELATION BETWEEN THE ORGANISATION AND THE ITEMS RELATED TO PUBLIC RELATIONS.

82. What are the draw-backs have you noticed with the companies that are inefficient?

: (a) (b) (c)

**OBJECTIVE**

A CRITICAL STUDY OF THE INEFFICIENT AND THE CLOSED ORGANISATION.
83. Which tools do you employ in the evaluation of performance? 

[A = Regularly, B = Rarely, C = Not at all, D = Not necessary, E = Never attempted at all]

(a) Daily report sheet  A B C D E
(b) Inspection report  A B C D E
(c) Accident report  A B C D E
(d) Passenger tour  A B C D E
(e) Vouchers for services  A B C D E

OBJECTIVE
TO MAKE A CRITICAL NOTE ON THE TOOLS OF EVALUATION OF PERFORMANCE.

84. Have you taken part in Research and Development Programmes with reference to your transport problems? : YES/NO

(a) Research - (i) Basic
   (ii) Applied
(b) Development - (i) Exploratory
   (ii) Advanced
   (iii) Technological

85. If 'YES', since when :

86. What are your research out-comes? : 
   (a) 
   (b) 
   (c) 

87. Have you implemented them in your day-to-day operations? : YES/NO

88. Do you feel that more Research is necessary in this direction? : YES/NO

OBJECTIVE
TO REVEAL THE RESEARCH OUTLOOK & THE NATURE OF RESEARCH INVOLVED IN THE RESEARCH & DEVELOPMENT PROGRAMMES IN SOLVING THE TRANSPORT PROBLEMS.
89. What are your suggestions for the sick unit of transport business?
(a)
(b)
(c)

90. How will you re-establish such sick units?
(a) Restructuring
(b) Turnaround
(c) Other

OBJECTIVE
TO CULL VARIOUS SUGGESTIONS FOR THE IMPROVEMENT OF SICK UNITS OF TRANSPORT BUSINESS.

91. Kindly state your problems with reference to vehicle management:

(A) (i) Acquisition of vehicles:
(ii) Maintenance of vehicles:
(iii) Repairs of vehicles:
(iv) Disposal of vehicles:
(v) Designes and body of vehicles:

(B) (i) Quality and workers:
(a) Drugs and Alcohol:
(b) Absenteeism:
(c) Labour turnover:

(C) Fare fixation and collection:

(D) Transport information system:

OBJECTIVE
A CRITICAL ANALYSIS ON THE PROBLEMS OF THE VEHICLE TRANSPORT MANAGEMENT.
92. Kindly state problems faced by you with respect to the management procedures:
   (a) Financial Management
   (b) Tourism Management
   (c) Human Resource Management
   (d) Banking Management
   (e) Insurance Management
   (f) Traffic Management
   (g) Police Management

OBJECTIVE
TO STUDY THE NATURE OF THE PROBLEMS INVOLVED IN THE MANAGEMENTAL PROCEDURE.

93. Kindly state some problems faced by you with respect to the 'Roads':
   (a) Symbols/Signals
   (b) Traffic rules
   (c) Fly-overs/Tunnels
   (d) Surface and carriage width
   (e) Speed limit/No entries
   (f) Parking facilities
   (g) Terminal facilities

OBJECTIVES
A CRITICAL REVIEW ON THE PROBLEMS FACED WITH RESPECT TO THE ROAD WAYS.

94. Kindly state some problems with reference to the Environmental Situation:
   (a) Pollution
   (b) Accidents
   (c) Godowns and Preservation
   (d) Weather Condition
   (e) Traffic Congestion

OBJECTIVE
TO SEE THE ROAD PROBLEMS AT A GLANCE WITH REFERENCE TO THE ENVIRONMENTAL SITUATION.
95. Do you want any centralised co-ordinate transport authority to maintain various problems of transport systems? : YES/NO

(a) Safety
(b) Pollution
(c) Design Standards of Vehicles
(d) Financial Matters
(e) Construction and maintenance of roads

96. Do you have any concrete solution relating to the above stated problems? :

(a)  
(b)  
(c)  

OBJECTIVE

TO MAKE SPECIAL EFFORTS TO KNOW EXACTLY WHAT IS MEANT BY THE CENTRALISED CO-ORDINATE TRANSPORT AUTHORITY (CCTA)

97. Do you operate your transport beyond the limits of Greater Bombay? : YES/NO

98. If 'YES', kindly state some problems faced by you beyond the jurisdiction of Greater Bombay :

(a)  
(b)  
(c)  

OBJECTIVE

TO HAVE A VIEW ON THE TRANSPORT SYSTEM BEYOND THE LIMITS OF GREATER BOMBAY.
4.3.1+ TECHNIQUES AND TOOLS OF RESEARCH

TECHNIQUES AND TOOLS

SCHEDULES

QUESTIONNAIRE

INTERVIEW

OPINIONNAIRE

RATING SCALE

MEASURING SCALES

OBSERVATION

2-POINT SCALE

3-POINT SCALE

5-POINT SCALE

FOR NUMERICAL DATA
4.3.2. INTERVIEW SCHEDULE

4.3.2.1 OBJECTIVES

1) To cross check the reliability of the above items

2) To know exactly the financial set-up of various organisations (This aspect will never reveal its true form in the above questionnaire schedule).

3) To have a birds' eye-view of the geographical locations.

4.3.2.2 RESPONDENTS

Extensive interviews have been conducted with the following Persons/Personnels.

1) The Directors of well established organisations e.g.,
   a) Savani Transport, Bombay 4.
   b) Patel Road ways, Bombay 3.

2) The consultancy service of the road transport e.g.,
   a) Tata consultancy, Bombay 21.
   b) Cambridge Consultancy, Bombay 16.
3) The Editors of magazines of the road transport e.g.,
   a) Transtopic, Bombay 1.
   b) Indian Journal of Road Transport Management CIRT Pune.

4) The Press reporters in connection with the articles published in the newspapers e.g.,
   a) Times of India, Bombay 1.

5) The Final authorities on Road Transport Management e.g.,
   a) Final authority in the field of "Traffic Management", Bombay 39.
   b) Final authority in the field of "Road Transport Management",
      Bombay 63.

6) The Authors of various books on the Road Transport Management e.g.,
   a) Author of "A Long Way To Go",
      Tata Press LTD, Bombay 24.
   b) Author of "Transport Management",
7) The Union leaders of the Workers' of the road transport industry e.g.,
   b) Vahatuk Maha Sangh, Bombay 3.

8) The Traffic police commissioners e.g.,
   a) Inspector General of Police (Traffic), Bombay 38.
   b) Transport Commissioner, Maharashtra state, Bombay 21.

9) The Professors/Head of departments of the universities e.g.,
   a) Department of Economics, (Transport Section) Bombay University.
   b) Department of Commerce and Management, Shivaji University.

10) Owners of the Transport business e.g.,
    a) Orient Roadlines, Bombay 3.
    b) Delux Road ways, Bombay 3.

11) The Office bearers of Bombay Goods Transport Association e.g.,
    a) President, Bombay 3.
    b) Joint Secretary, Bombay 3.

12) The Office bearers of Bombay Lorry Owners Association e.g.,
    a) Chairman, Bombay 3.
    b) Secretary, Bombay 3.

13) The managers/Managing directors of
Banks/leasing Companies e.g.,
a) Abhyudaya Co-Operative Bank, Bombay 33.
b) 20th Century Finance Corporation Limited, Bombay 12.

14) The Managers/Managing directors of Insurance companies e.g.,

15) The Engineers/officers in Bombay Municipal Corporation & Bombay Metropolitan Regional Development Authority e.g.,
a) Public works department, Bombay 1.
b) Planning department, Bombay 1.

16) The State ministers e.g.,
a) Minister for transport department, Maharashtra State.
b) Minister for Home department, Maharashtra State.

17) The Engineers working on construction and maintenance of Roads and Fly-overs in Greater Bombay e.g.,
a) Jog Construction, Bombay 51.
b) ECC, Larson and Toubro, Bombay 22.
18) Office bearers of welfare associations e.g.
   a) Secretary of Kamgar Sahakari Patpedhi Limited., Bombay 9.
   b) Secretary of Mathadi Kamgar Sahakari Grahak Society Limited,
       Bombay 9.

19) Consulates and High Commissioners
   a) British Deputy High Commissioner,
       Bombay 21
   b) Consulate General of U.S.A.,
       Bombay 26.

4.3.2.3 FACETS

The interview schedule covered the following aspects directly or indirectly.

1) Accident Policy
2) Financial matter
3) Research publications
4) Career-oriented progress
5) Collaboration
6) Inter-state relations
7) Policy matters
8) Public matters
9) Human Resource Development
10) Consultancy services
4.4 SAMPLING TECHNIQUES : PILOT STUDY

(INCLUDING STATISTICAL TOOLS)

4.4.1 ZONAL SET-UP

To get a right perspective of the respondents, the entire Bombay road scheme is divided into four chapters called 'zones' for gathering necessary research data.

The following factors are taken into consideration for demarking different zones as A, B, C and D

1) SHIFT FACTOR

In olden days 'Matunga' is the central bifurcation point, since one can reach Wadala (the heart of lorry transport) and other suburbs (East, West, South & North) from this central point.

However, recently the shift (called the Red shift of transport) is titled to Sion, since new cross-road links are well-established. In future, this shift would be extended to Chembur. Such a day is not far away, since a special new-road leading to Wadla is on the way for its completion, solely designed for lorries.
2) **RIVER FACTOR**

The 'Mithi' river divides the inner city of Bombay into two vital zones.

3) **Approachability**:

Sion is the main location, which is easily approachable to both the Eastern and the Western Highways.

4) **Flow**:

Traffic flow from the southward direction during early hours of the morning and the northward in the evening could be reduced only at the point of diversion located at sion.

5) **Complex-Area**:

The axle road towards Bandra-kurla complex starts from sion only.

6) **In-flow Service**:

Several bridges are operated at Sion junction connecting the East and the West.

7) **Focal Point**:

Sion acts as a focal point, if the convexity of the sea-beaches are taken into consideration on either sides.
4.4.2. PILOT STUDY

During the Pilot Study, the following things are taken into consideration:

1) **Number of respondents**: 50

2) **Zone-wise respondents**: A - Zone : 32
   B - Zone : 6
   C - Zone : 8
   D - Zone : 4
   **Total**: 50

3) **Selection of Vehicles**

   Number of organisations dealing with Lorry transport : 43

   Number of organisations dealing with Bus transport : 7
   **Total**: 50

4) **Testing Process**:

   Generally the following tests are employed to find the validity and reliability of the scores. They are
   i) The Half-split method
   ii) The parallel method
   iii) The Testing and Re-testing method
The researcher has selected "the testing and retesting method."

In this, the raw items of questionnaire are administered first to the above said 50 (fifty) respondents selected and on their suggestions the questionnaire is once again re-scheduled and modified for its final validity.

5) The nature of the respondents:
The Sole Proprietorship organisation : 13
The Partnership organisation : 30
The Company organisations : 7

Total : 50

4.4.3. STATISTICAL TOOLS

The following statistical tools/techniques are widely employed in the research process.

<table>
<thead>
<tr>
<th>NAME OF THE TOOL/ TECHNIQUE</th>
<th>PURPOSE FOR WHICH IT IS EMPLOYED</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - TABLES</td>
<td></td>
</tr>
<tr>
<td>i) Percentages</td>
<td>To study the nature of aggregate quantities.</td>
</tr>
<tr>
<td>ii) Mean</td>
<td>To identify the correct response.</td>
</tr>
</tbody>
</table>
Standard Deviation (S.D.)

To compare two given items vibrating under the same conditions.

Co-efficient of Variation (C.V.)

To pick up the order of preference while comparing different quantities.

$\chi^2$ - test (Chi-square test)

To test the validity of response.

Rating Scale

To convert the qualitative responses into quantitative numericals.

II. GRAPHS

One-dimensional graphs

To study the linear dimensions of the responses.

Two-dimensional graphs

To find the mathematical relation between the two quantities in terms of their functionality.

Three-dimensional graphs. Here the word 'three dimensional' indicates the comparison of different facets of a given items.
three dimensional effect only, not otherwise, (drawn on two-dimensional sheet)

v3 Bar/Histogram/ Comparative study of pie-chart groups.
v3 Line graphs Ranges covered.

Thus, the researcher has used almost all graphical representations available in the studies of research.

4.5. PROBLEMS FACED BY THE RESEARCHER

Research is an up hill task. It is not an easy task that can be accomplished in a day-or-two. It is a continuous process. In fact, it is never ending phenomenon. It is going to be a tough time to any researcher, if it is related to public relations or Human resource. So one might come across certain critical problem during such operational procedures. The researcher is not an exception to this. Here are a few complex problems faced by the researcher are discussed as a part of the research study.
i) **Problem of homogeneity**: Division of zones (selected) has created multiple complex problem, without any solution for a long interval of time. This is mainly because of the Red Shift Factor discussed elsewhere in this chapter, in detail. However the researcher could overcome this problem, comparing the old Bombay maps available with the latest maps available on the computer. For this the researcher should be grateful to the Local self-Government Authorities, Andheri, Bombay.

ii) **Problem of Publications**: It took nearly six months for the researcher to find out exactly the location of the publication-offices related to transport agencies of Greater Bombay. The reason is very simple. Handful of publications are run only in Bombay. Their offices being located at remote areas without any sense of wide publicity. Identification of such offices has created this problem.

iii) **Lack of internet**: Internet System, computers, cyber cafe information, are totally absent in any form. The data is to be collected from
the primary source which is an uphill task since agencies are scattered at different zones.

(iv) **Attitude**:

Bombay has its own history. This history has some connection with the transport industry. Such historical facts are not traceable at any place, finally after a prolonged search, the developmental maps of Bombay, the researcher could locate -- costliest affair ever handled.

(v) **Cross-checks**

Patterns, structures and other interlinks are different from one organisation to another organisation. So it is a great task on arrive at common generalisations based on working systems. However, the researcher could identify them when he classified and sub-classified them with the help of experts in the field, from time to time.

4.6. **CONCLUSIVE ASPECT**

Both 'content' and 'method' are to be fused for better output. Such package systems (content + method = package system) are not readily available in this field of Road Research Transport Area. In such cases, the
researcher should seek different avenues to solve his/her problems. Apart from this, even the subject-content is anew. It is the Management of Road-ways. Traditional methods are also restructured in this light of modern management programmes.

This is exactly the crux of this research methodology -- a meeting point of operational, traditional, structural and computer-oriented research techniques employed in a coherent way while doing so, the Parametric Analysis selected the right variables and rejected the unwanted variables.

This is the manipulation of right variables in this methodology.